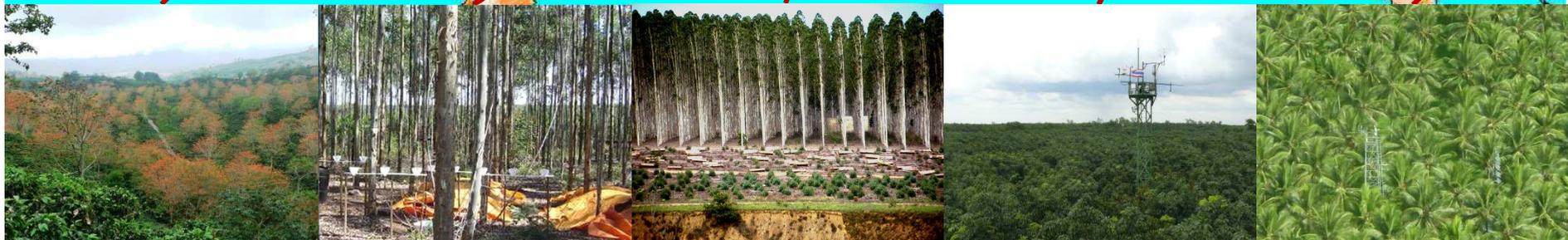
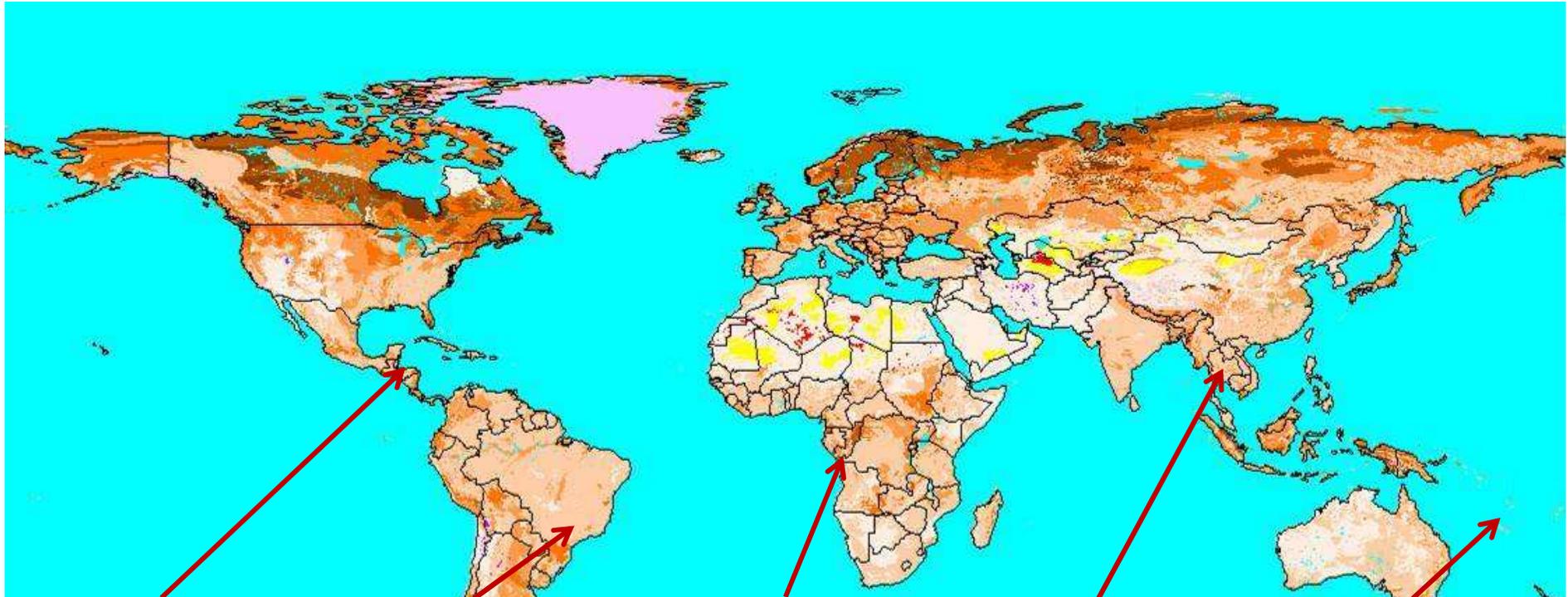


Flux measuring sites of the Eco&Sols mixt research unit contribute to meta-analyses in continental and global networks



CoffeeFlux

EucFlux

CongoFlux

RubberFlux

CocoFlux

Scientific Objectives

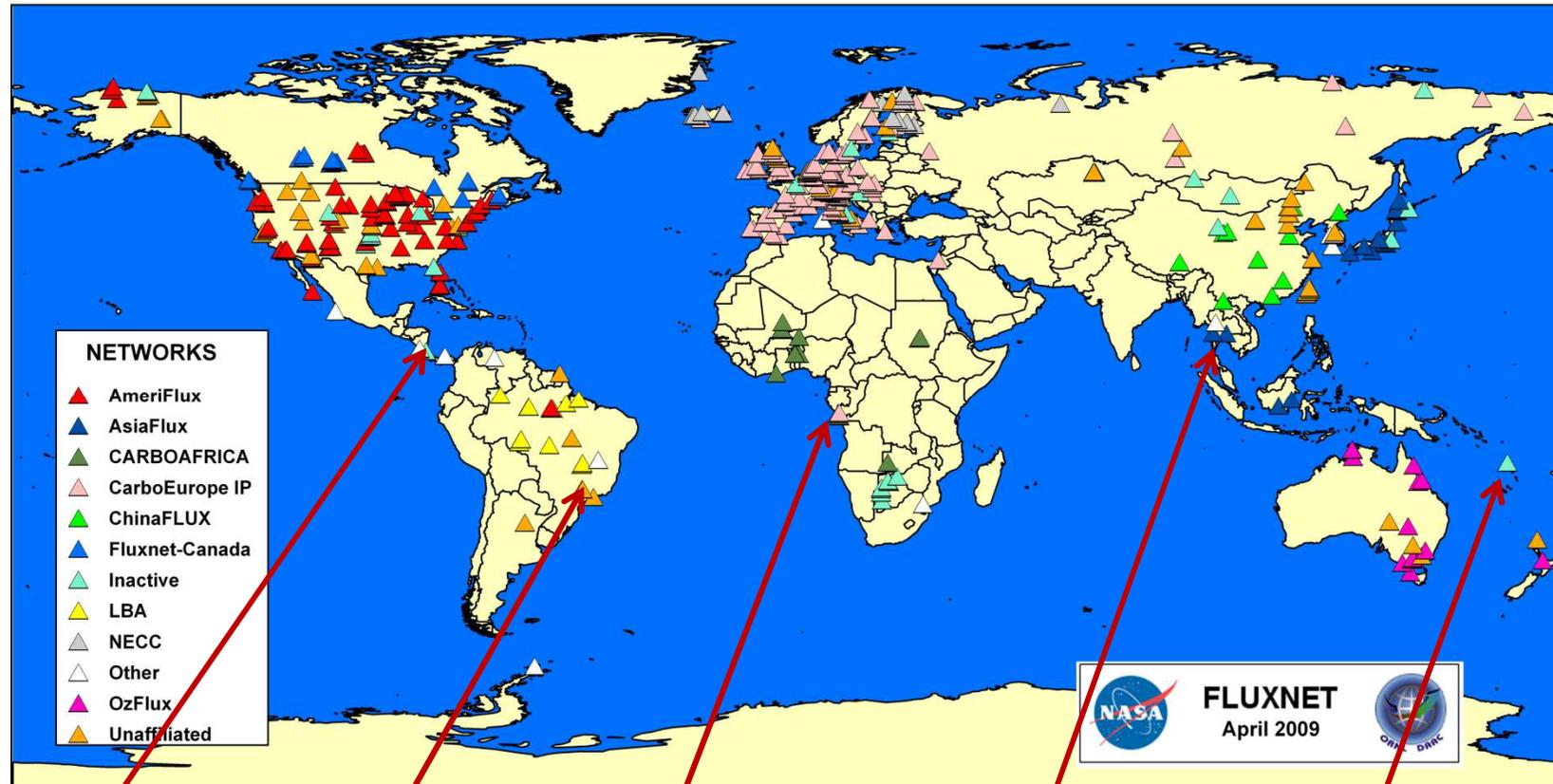
- Compare and model the ecological performances of our sites (humid tropics, perennial or savanna) to other reference ecosystems and biomes, natural or anthropised, under various climates and constraints.
- Develop and implement a range of models adapted to diverse scales: the larger the scale, the simpler the model for parameterization.
- Progressive integration of variables linked to Global Changes: Climate Changes, Land Use Changes, adaptations to GC.
- Perform meta-analyses, not only on fluxes (CO_2 , water) or stocks, but also on the ecological processes and their consequences (ex. carbon allocation and its effects on long term C sequestration).

Issues

- Highlight our expertise in the humid tropical area, the plantations, afforestation (a unique network!).
- Participate to international projects on the effects of Global Changes, mitigation, adaptation/vulnerability.
- Integrate plants and soil: develop synergies between soil sciences (SOM, particularly) and ecophysiology.



Participation of the Eco&Sols network to meta-analyses since 2007



CoffeeFlux
Costa Rica

EucFlux
Brasil

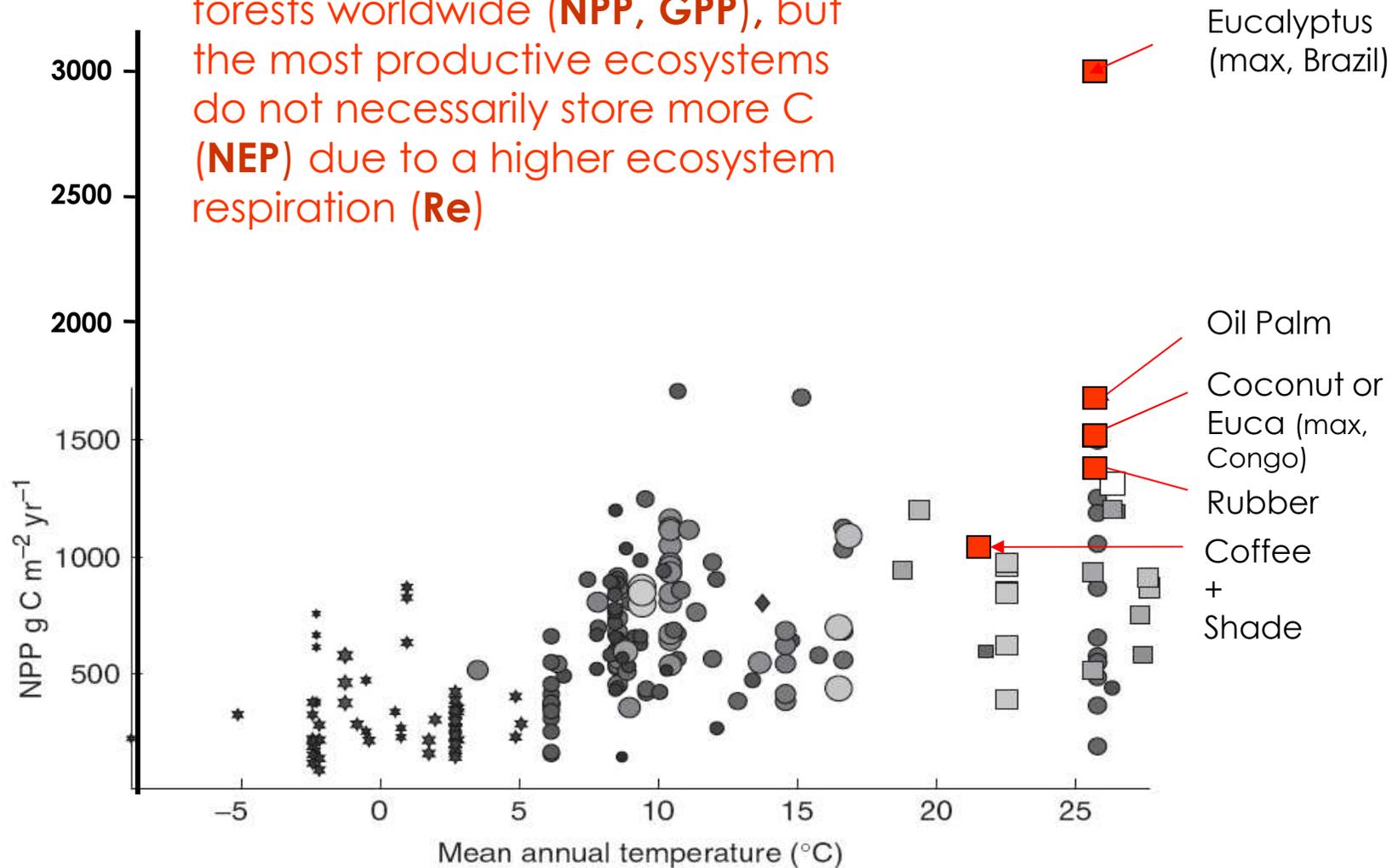
CongoFlux
Congo

RubberFlux
Thailand

CocoFlux
Vanuatu

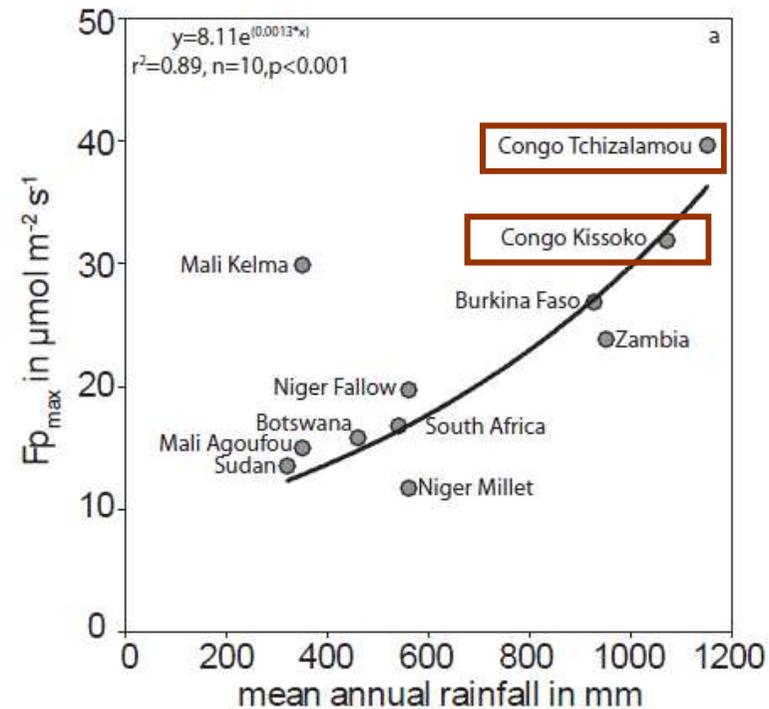
Ex 1. Meta-analysis of worldwide biomass production of forests

Tropicales humid plantations are among the most productive forests worldwide (**NPP, GPP**), but the most productive ecosystems do not necessarily store more C (**NEP**) due to a higher ecosystem respiration (**Re**)



Modified from: Luysaert et al., Global Change Biology, 2007

Ex 2. Meta-analysis of Photosynthesis of african ecosystems

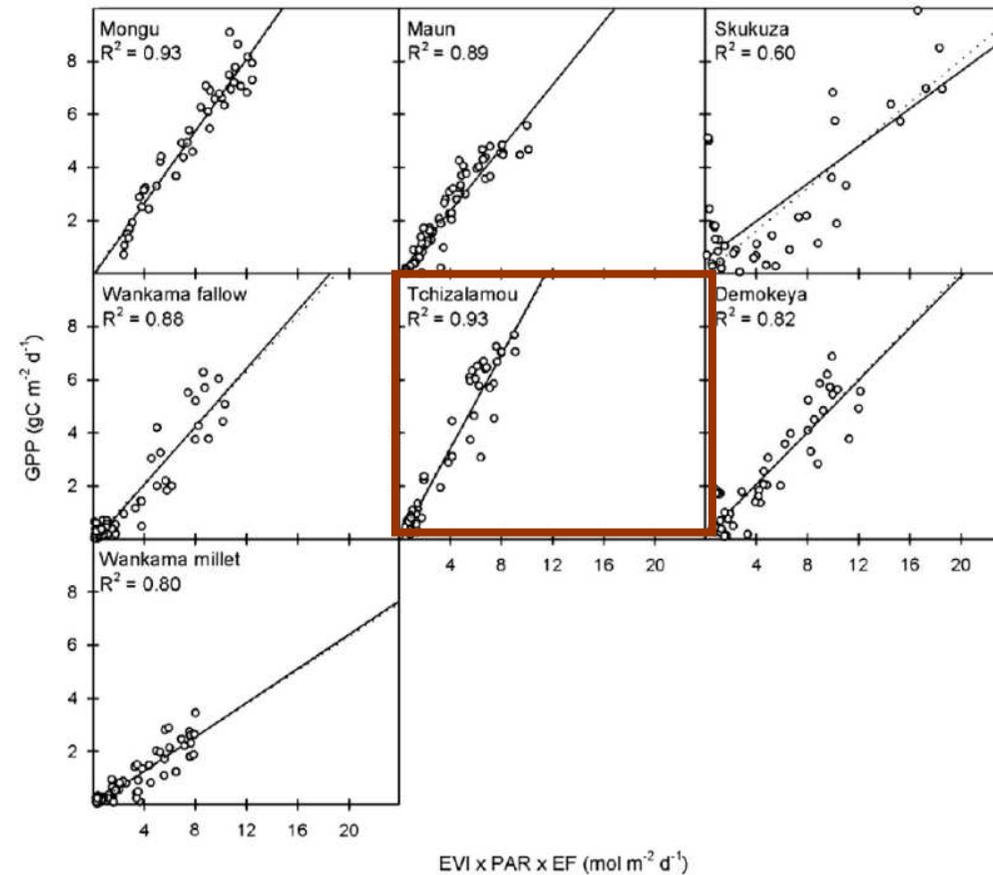


The maximal photosynthesis of african ecosystems depends mainly on mean rainfall

Ex 3. Meta-analysis of primary production of african ecosystems

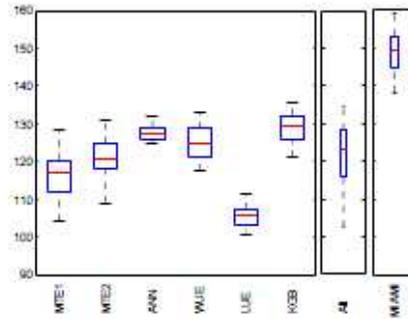
M. Sjöström et al. / Remote Sensing of Environment 115 (2011) 1081–1089

1087

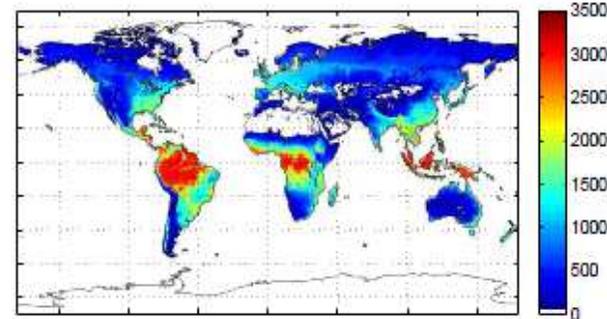


Use of remote-sensing (MODIS EVI) to model Gross Primary Production of different african ecosystems.

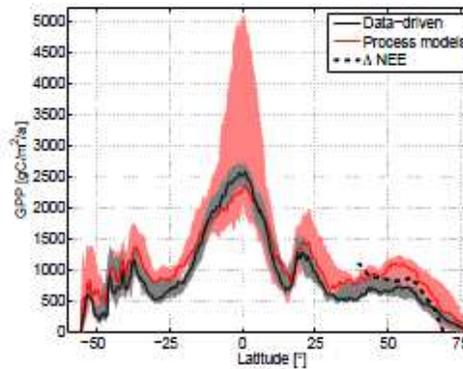
Ex 4. Global gross primary production from compared models



(a)



(b)

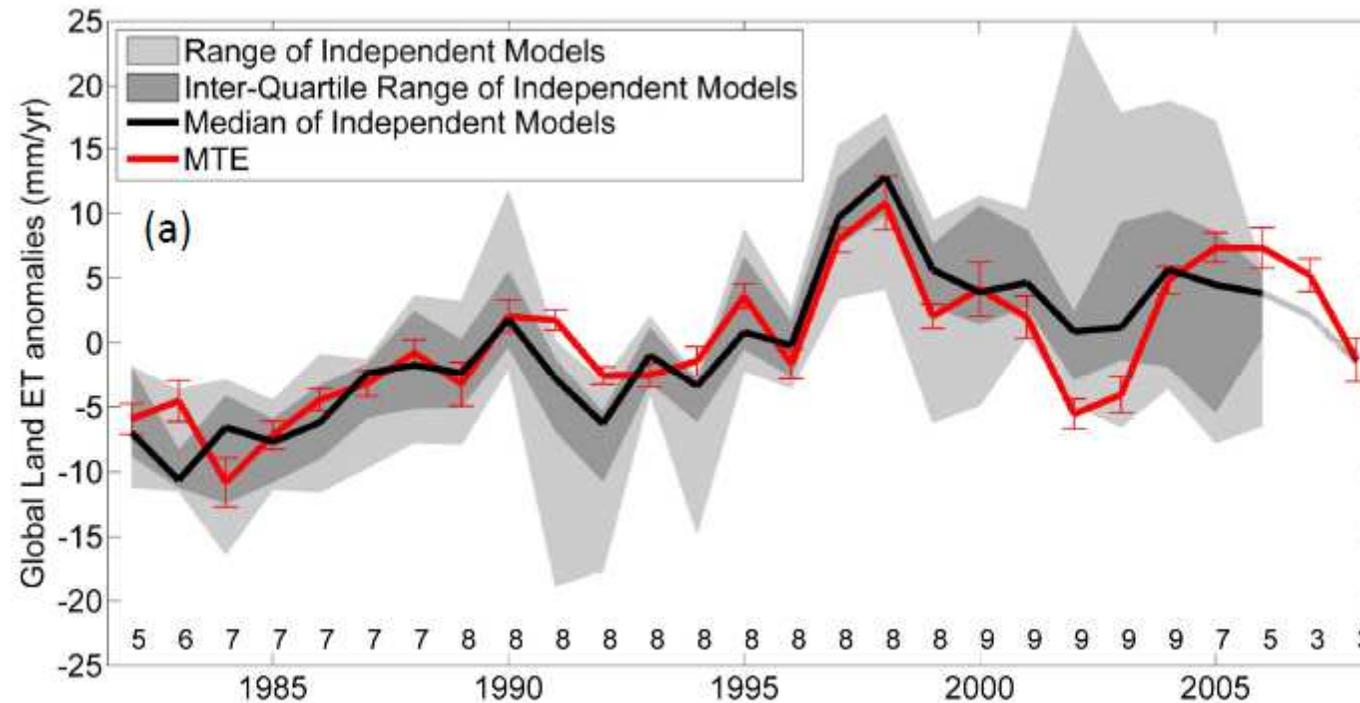


(c)

Comparaisons of empirical and mechanistic models.

Application = global GPP map, effect of latitude

Ex 5. ETR / global balance and recent trends



The global evapotranspiration followed the increase in evaporative demand induced by the increase in temperature until 1998. However, it reached a ceiling since then, probably due to a limitation by soil water availability.

Jung et al., Nature, 2010